CLAIMS

What is claimed is:

1. A system for detecting the locations and/or motions of wireless network devices communicating within a wireless network, comprising:

a first network device configured for wirelessly communicating beacon frames which include signal strength information with at least two other network devices; and

means for detecting the distances between said first network device and the other network devices in response to signal strength information contained within communication frames to determine the positions of wireless network devices and/or the motions of one network device in relation to the other network devices.

2. A system as recited in claim 1, wherein said distance detecting means comprises:

a computer configured for communicating with other wireless network devices; and

programming configured for execution on said computer for,

communicating wirelessly according to a layered protocol with other networks,

supporting a media access control (MAC) layer within said layered protocol,

detecting the distances between said first network device and the other network devices in response to signal strength information contained within communication frames,

determining the positions of wireless network devices and/or the motions of one network device in relation to the other network devices.

3. A system as recited in claim 2, wherein said programming is further configured for:

generating distance vectors between a plurality of wireless network devices,

including said first network device based on signal strength information contained within the communication frames.

4. A system as recited in claim 1, wherein said means for detecting the distances comprises:

a motion monitor module configured for monitoring proximity motion of a plurality of wireless network devices in the wireless network system;

a signal strength monitoring module configured for monitoring the signal strength between communicating network devices within said plurality of wireless network devices;

a vector coordinates generation module configured for generating vectors based on signal strengths between said plurality of devices; and

a proximity motion sensor module for detecting the relative motion of one or more of said plurality of wireless network devices communicating on the wireless network.

5. A system for detecting two or three-dimensional motion of wireless network devices communicating within a wireless network, comprising:

a first network device configured for wirelessly communicating beacon frames which include signal strength information with at least two other network devices;

a motion monitor module configured for monitoring proximity motion of network devices within the plurality of at least three wireless network devices in the wireless network;

a signal strength monitoring module configured for monitoring the signal strength between communicating network devices within said plurality of wireless network devices;

a vector coordinates generation module configured for generating vectors based on signal strengths between said plurality of devices; and

a proximity motion sensor module for detecting the relative motion of one or more of said plurality of wireless network devices communicating on the wireless network.

6. A system as recited in claim 4, wherein said vector coordinates generation module is configured for calculating distance vectors between a plurality of wireless network devices based on signal strength information contained within the communication frames.

7. A system as recited in claim 6, wherein said vector coordinates generation module is configured for calculating a relative two-dimensional or three-dimensional coordinate representation for the position of each of said plurality of wireless network devices.

8. A system as recited in claim 7, wherein said vector coordinates generation module is configured for calculating a precise distance traveled position of a particular wireless network device in motion with respect to the other wireless network devices communicating on the wireless network.

9. A system as recited in claim 7, wherein said vector coordinates generation module utilizes the coordinate representation of initial points and destination points to determine the direction of travel of a particular wireless network device at a given time within the wireless network.

10. A system as recited in claim 9, wherein said vector coordinates generation module is configured for utilizing the coordinate representation of the initial points and the destination points to determine the distance traveled by the particular wireless network device at a given time.

11. A system as recited in claim 10, wherein said vector coordinate generation module is configured for utilizing the coordinate representation of the initial points and the destination points to calculate the speed traveled by the particular wireless network devices at a given time.

12. A system as recited in claim 11, wherein said vector coordinate

generation module is configured for generating a relative two-dimensional or three-dimensional coordinate representation of distance vectors from said plurality of wireless network devices to determine the relative two-dimensional or three-dimensional coordinates of each of the plurality of wireless network devices in a two-dimensional or three-dimensional plane.

13. A system as recited in claim 12, wherein said generating of relative two-dimensional or three-dimensional coordinate representation is configured for utilizing a matrix of distances between each of said plurality of wireless network devices communicating in the wireless network to create the two-dimensional or three-dimensional coordinate representation.

14. A system as recited in claim 5, wherein said signal strength motion sensor module is configured for sensing movement by a particular wireless network device with respect to the other wireless network devices communicating in the wireless network.

15. A system as recited in claim 5, wherein said signal strength monitoring module is configured for calculating distance changes between each of the plurality of wireless network devices relative to the other devices communicating in the wireless network.

16. A system as recited in claim 5, wherein said signal strength monitoring module is configured for continuously monitoring frame beacons transmitted by a sending wireless device to a receiving wireless device communicating in said wireless network at a predetermined transmission interval.

17. A system as recited in claim 16, wherein said signal strength vector coordinates generation module is configured for generating a two-dimensional coordinate system in a two-dimensional plane in response to determining any three points and their corresponding distances.

18. A system as recited in claim 16, wherein said vector coordinates generation module is configured for generating a three-dimensional coordinate system in a three-dimensional plane in response to determining any four points and their corresponding distances.

19. A system as recited in claim 5, wherein said motion sensor module is configured for inputting motion within a user interface for said first device, or the other devices communicating on said wireless network.

20. A method of detecting proximity between a plurality of wireless network devices communicating over a wireless network system, comprising:

determining distance vectors between a plurality of wireless network devices in response to signal strength information registered from communication of frames between the plurality of wireless network devices;

determining a relative two-dimensional or three-dimensional coordinate representation for the position of each of said plurality of wireless network devices;

determining a precise distance traveled position of a particular wireless network device in motion with respect to the other wireless network devices communicating on the wireless network; and

generating motion sensor outputs responsive to the coordinate representation of said plurality of wireless network devices for detecting the motion of any particular one of said plurality of said wireless network devices with respect to the other wireless network devices communicating on the wireless network.

21. A method as recited in claim 20, further comprising determining distance changes between each of the wireless network device relative to the other wireless network devices in said wireless network system.

22. A method as recited in claim 20, further comprising utilizing the coordinate representation of initial points and destination points to determine the direction of travel of a particular wireless network device at a given time.

23. A method as recited in claim 22, further comprising utilizing the coordinate representation of the initial points and the destination points to determine the distance traveled by the particular wireless network device at a given time.

24. A method as recited in claim 23, further comprising utilizing the coordinate representation of the initial points and the destination points to determine the speed traveled by the particular wireless network device at a given time.

25. A method as recited in claim 24, further comprising recalibrating coordinate and position information of a new wireless network device when said new wireless network device enters or leaves the wireless network.

26. A method as recited in claim 25, wherein determining the relative two-dimensional or three-dimensional coordinate representation comprises utilizing multiple distance vectors from multiple wireless network devices in the wireless network to calculate the relative two-dimensional or three-dimensional coordinates.

27. A method as recited in claim 26, wherein a matrix of distances between each of the plurality of wireless network devices in the wireless network system is utilized in creating the two-dimensional or three-dimensional coordinate representation.

28. A method as recited in claim 27, wherein given any three points and their corresponding distance, a two-dimensional coordinate system in a two-dimensional plane is created.

29. A method as recited in claim 28, wherein given any four points and their corresponding distance, a three-dimensional coordinate system in a three-dimensional space is created.

30. A method as recited in claim 20, wherein the motion sensor system is

configured for inputting position and/or motion information to a user interface to control operations of one or more devices.

31. A method as recited in claim 20, wherein said determining of the signal strength is performed within a selected proximity range.

32. A method as recited in claim 31, wherein said selected proximity range comprises a range which is predetermined for said wireless network.